CLAIMS

1. A power supply apparatus comprising:

an inverter controller outputting an externally provided direct current in response to a predetermined control signal;

a power transforming part converting the direct current into an alternating current, and transforming voltage of the alternating current to output a first polarity current and a second polarity current; and

a connecting part outputting the first polarity current to a first end portion of a load through a first terminal, the connecting part outputting the second polarity current to a second end portion of the load through a second terminal, and the connecting part having a third terminal to receive a sensed signal in response to the first or second polarity currents so as to output the sensed signal,

wherein the first terminal is spaced apart from the second terminal by a first insulating distance, and the third terminal is spaced apart from the first or second terminals adjacent to the third terminal by a second insulating distance.

2. The apparatus of claim 1, further comprising a power sensor disposed adjacent to the first or second end portions of the load so as to sense a level of the alternating current applied to the load.

3. The apparatus of claim 1, further comprising a detecting signal generating part comparing the sensed signal output from the third terminal with a predetermined reference signal to generate the control signal, thereby providing the control signal to the inverter controller.

4. The apparatus of claim 1, wherein the first and second insulating

distances are no less than 3mm and 2mm, respectively.

5. The apparatus of claim 1, wherein the inverter controller, the power transforming part and the connecting part are formed on one substrate.

6. A backlight assembly comprising:

a lamp driving part converting an externally provided direct current into an alternating current, and transforming voltage of the alternating current to output the alternating current;

a light emitting part including a lamp having a first end portion to which high voltage alternating current is applied, and generating a light in response to the transformed alternating current; and

a light controller increasing luminance of the light,

wherein the lamp driving part includes:

an inverter controller outputting the externally provided direct current in response to a predetermined control signal;

a power transforming part converting the direct current into the alternating current, and transforming voltage of the alternating current to output a first polarity current and a second polarity current; and

a connecting part outputting the first polarity current to a first end portion of a load through a first terminal, the connecting part outputting the second polarity current to a second end portion of the load through a second terminal, and the connecting part having a third terminal to receive a sensed signal in response to the first or second polarity currents so as to output the sensed signal,

wherein the first terminal is spaced apart from the second terminal by a first insulating distance, and the third terminal is spaced apart from the first or second terminals adjacent to the third terminal by a second insulating distance.

7. The backlight assembly of claim 6, further comprising a power sensor disposed adjacent to the first or second end portions of the lamp so as to sense a level of the alternating current applied to the lamp.

8. The backlight assembly of claim 7, wherein the power sensor includes a coil.

9. The backlight assembly of claim 7, wherein the lamp driving part further comprises a detecting signal generating part comparing a sensed signal from the power sensor with a predetermined reference signal to generate a detecting signal, the detecting signal generating part providing the detecting signal to the inverter controller as a control signal so as to provide a constant current to the lamp.

10. The backlight assembly of claim 9, wherein the power transforming part further comprises a transformer having a first windings and a second windings so as to transform the voltage of the alternating current, and wherein the power sensor sensing a voltage in accordance with an electric field generated in response to a current flowing through the second windings, and providing the sensed voltage to the detecting signal generating part as a sensed signal.

11. The backlight assembly of claim 9, wherein the lamp driving part includes a plurality of the detecting signal generating parts and a plurality of the power sensors,

and a number of the detecting signal generating parts is no more than a number of the power sensors.

12. The backlight assembly of claim 7, wherein the lamp includes an EEFL.

13. The backlight assembly of claim 12, wherein the lamp driving part includes a plurality of the EEFLs, and the power sensor is connected to at least one of the EEFLs.

14. The backlight assembly of claim 7, wherein the lamp includes a plurality of the EEFLs connected to each other in parallel.

15. The backlight assembly of claim 7, wherein the power transforming part includes a transformer having a first windings and a second windings so as to transform voltage of the alternating current,

and the power sensor is disposed adjacent to the second windings of the transformer.

16. The backlight assembly of claim 6, wherein the power transforming part supplies a constant voltage, of which positive-polarity and negative-polarity levels of the transformed alternating current are substantially equal to each other, to the lamp.

17. The backlight assembly of claim 6, wherein the power output part supplies a constant voltage, of which minimum and maximum levels of the transformed alternating current are substantially equal to each other, to the lamp.

18. The backlight assembly of claim 6, wherein the inverter controller comprises:

a controlling part generating a switching signal to control an output of a constant current applied to the lamp in response to an on/off signal and an externally provided dimming signal;

a switching part turning on or turning off an output of the direct current in response to the switching signal; and

an inverting part converting the direct current supplied through the switching part into a first alternating current to supply the first alternating current to the power transforming part.

19. The backlight assembly of claim 18, wherein the inverter controller further comprises a diode having a cathode connected to an output terminal of the switching part and an anode grounded so as to prevent a rush current output from the inverting part from being supplied to the switching part.

20. The backlight assembly of claim 6, wherein the inverter controller further comprises a switch driving part amplifying a signal used to control a level of the alternating current output from the controlling part, and supplying the amplified signal to the switching part.

21. An LCD apparatus comprising:

a backlight assembly including

a lamp driving part converting an externally provided direct current into an alternating current, and transforming voltage of the alternating current to output the alternating current,

a light emitting part including a lamp having an end portion, to which high voltage alternating current is applied, and generating light in response to the transformed alternating current, and

a light controller increasing luminance of the light; and

a display unit disposed on the light controller to receive the light from the light emitting part through the light controller, thereby displaying an image,

and wherein the lamp driving part includes

an inverter controller outputting the externally provided direct current in response to a predetermined control signal;

a power transforming part converting the direct current into the alternating current, and transforming a voltage of the alternating current to output a first polarity current and a second polarity current; and

a connecting part outputting the first polarity current to a first end portion of the lamp through a first terminal, the connecting part outputting the second polarity current to a second end portion of the lamp through a second terminal, and the connecting part having a third terminal to receive a sensed signal in response to the first or second polarity currents so as to output the sensed signal,

and wherein the first terminal is spaced apart from the second terminal by a first insulating distance, and the third terminal is spaced apart from the first or second terminals adjacent to the third terminal by a second insulating distance.

22. The LCD apparatus of claim 21, wherein the first and second insulating distances are no less than about 3mm and about 2mm, respectively.

23. The LCD apparatus of claim 21, wherein the inverter controller, the power transforming part and the connecting part are formed on one substrate.

24. The LCD apparatus of claim 21, further comprising a power sensor disposed adjacent to the first or second end portions of the lamp so as to sense a level of the alternating current applied to the lamp.

25. The LCD apparatus of claim 21, further comprising a detecting signal generating part comparing the sensed signal output from the third terminal with a predetermined reference signal to generate the control signal, thereby providing the control signal to the inverter controller.